Kulvir Jaydeep Chavda | My Website & Portfolio: www.kulvirchavda.com

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EDUCATION, SKILLS, & COURSES

University of Illinois at Urbana-Champaign - UIUC, *Junior*……...*Graduation: May 2026*
B.S in Aerospace Engineering with a Minor in Computer Science (James Scholar Honors)……...***Cumulative GPA: 3.82***
Fall 2024, Grainger College of Engineering Dean's List (Semester GPA: 4.0)

- **Skills:** Java, Python, C++, Arduino C++, HTML/CSS/JS, ROS2, Linux/Unix, MATLAB & Simulink, Siemens NX, Fusion 360, CATIA, SolidWorks, Eagle EDA, Proteus V8, BurnSim, Computational Fluid Dynamics, Finite Element Analysis, 3D Printing, Soldering, Microsoft Word, Microsoft Excel, and Microsoft PowerPoint – Eager to expand my skillset.
- **Taken/In-Progress:** Incompressible/Compressible Flow, Aero Structures, Aero Dynamical/Control Systems, Aero Flight Mechanics, Numerical Methods, Theoretical & Applied Dynamics, Calculus & Linear Algebra, Full C.S. Core & Electives.

WORK EXPERIENCE & ENGINEERING PROJECTS

Aerospace Engineering R&D Intern – Summer 2024 *June, 2024 – August, 2024*
Adani Defence & Aerospace, Ahmedabad, India

- Conducted foundational research and design for short-range missile systems targeting drone countermeasures.
- Analyzed project requirements to create/present a detailed 2-month action plan to go from concept-to-design successfully.
- Conceptualized 3 engineering design variants for senior engineers, within 2 weeks, to kickstart project development.
- Designed the vehicle trajectory manually and modelled it using Python to gain insight on vehicle propellant necessities.
- Calculated potential propulsive & aerodynamic forces, by hand, on vehicle and optimized structure materials accordingly.
- Created six weekly design presentations to verify technical integrity/requirements & reduce manufacturing time by 20-50%
- Authored a 40-page final engineering design report outlining research, math, references, CAD/blueprints, and future steps.

Head of Technical Projects *January, 2023 – Present*
Minorities in Aerospace (MAero) – University of Illinois, Urbana Champaign

- Planning, advising, and recruiting engineering students for any technical initiatives undertaken by MAero.
- Leading technical project teams to design/build a High-Altitude Rocket, Sustainable Airplane, and fully 3D-Printed Drone.
- Spearheading brainstorming sessions to create design options, plan budget, and optimize technical parts lists for projects.
- Secured $2,500 of funding from Blue Origin in my first semester & organized a research event with 5+ professors.

Aerospace Educational Development & Outreach *April, 2023 – May, 2024*
Department of Aerospace Engineering – University of Illinois, Urbana Champaign

- Taught 15+ STEM teachers & students in rocket science, guiding them through building, flying, and analyzing rockets.
- Built, optimized, and troubleshooted 150+ short range rockets & avionics to collect flight data & analyze trends.
- Identified and implemented course improvements through detailed surveys that improved course structure & effectiveness.

Project Systems Engineer *August, 2023 – November, 2023*
Department of Defense S.T.E.M. Vertically Landed Rocket Challenge

- Built a lander that, under free fall, used a solid rocket motor to reorient and land itself from an altitude of 30m.
- Utilized UIUC's VLR parts resource & online avionics programming library to optimize our model & simulate landings.
- Achieved successful burn and recorded avionics data from an unsuccessful landing to improve design in the future.

RESEARCH & WRITING

Researcher & Systems/Controls Engineer *November, 2024 – Present*
Autonomous Control, Exploration, Intelligence & Systems Lab (ACXIS) at UIUC – Dr. Hiroyasu Tsukamoto

- Designing three foundational experiments for hardware implementation, testing, and verification of autonomous three-dimensional GNC algorithms in swarms of n-numbered heterogenous unmanned aerial vehicles for unmapped terrains.
- Implementing AI-based controls theory research using 5+ types of Python/ROS2 controlled S.L.A.M based UAVs/Robots.

Researcher & First Author, University of Illinois at Urbana-Champaign *May, 2023 – May, 2024*
Title: ***Using the Drag Equation and Euler's Method in Python to Predict Model Rocket Flight Trajectories***

- Utilized rocket flight data (24 flights), thrust tests, & Python to write an algorithm that predicts accurate rocket trajectories.
- Conducted 25+ solid rocket-motor thrust tests to create accurate theoretical thrust curves to plug into python algorithms.
- Designed the algorithm structure and developed a Python application with a GUI (Graphical User Interface) to take user input and output graphs depicting altitude vs. time and drag force vs. time for the model rocket, both with and without drag.
- Publication awarded 3rd place at the AIAA Region III Conference in April, 2024 (https://doi.org/10.2514/6.2024-84150).